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June 10, 2010

FILED
2010 JUN 10 P 4:08
PUBLIC UTILITIES
COMMISSION

The Honorable Chairman and Members of the
Hawaii Public Utilities Commission
465 South King Street, First Floor
Kekuaanoa Building
Honolulu, Hawaii 96813

Subject: Docket No. 2010-0062
East Oahu Transmission Project ("EOTP")
Request to Modify EOTP Phase 2
Environmental Assessment Update

Dear Commissioners:

Hawaiian Electric, Inc. ("Hawaiian Electric") respectfully updates the Final Environmental Assessment for the East Oahu Transmission Project dated January 2005 ("Final EA")¹ with new information related to the Phase 2 Modification.² This letter also identifies, where appropriate, possible management and design measures to minimize or avoid impacts. This letter begins with a description of the differences between the original EOTP Phase 2 and Hawaiian Electric's Proposed Phase 2 Modification, and then discusses direct impacts from the Phase 2 Modification. Secondary and cumulative impacts are addressed at the end of this letter. In summary, the conclusions in the Final EA regarding the Finding of No Significant Impact determination and the reasons supporting that determination remain unchanged.

I. DESCRIPTION OF THE PROPOSED PHASE 2 MODIFICATION

One primary difference between the original EOTP Phase 2 and the Phase 2 Modification is the reduced construction requirements in public right-of-ways. In the original Phase 2 scope, a total of approximately 1.9 miles of new underground 46kV ductlines would be constructed in Cooke Street, South King Street, and McCully Street, with cable installations to follow. (Approximately 1.5 miles of the ductlines would be in South King Street.) The ductline construction and cable installation in the public right-of-ways was estimated to take approximately 15 to 18 months to complete, and about 3½ years from engineering and permitting to in-service.

¹ The Final EA for the EOTP was submitted by letter dated January 7, 2005 in Docket No. 03-0417.

² In its response to CA-IR-2, filed May 20, 2010 in the subject proceeding, Hawaiian Electric stated its intent to provide the Commission with an updated analysis of the environmental impacts for the Phase 2 Modifications by June 10, 2010.

For the Phase 2 Modification, Hawaiian Electric's Application filed April 9, 2010 ("Application") identified a total of approximately 700 feet of underground communication ductlines that would be installed in the public right-of-ways. (No new 46kV ductlines or cables would be installed.) The Application indicated that on average, approximately 100 feet of new ductline for telecommunication cable would be required outside each of the following seven substations: Pi'ikoi Substation located on Hassinger Street in Makiki, Mānoa Substation located on Sea View Street in Mānoa, UH Quarry Substation located in the University of Hawai'i at Mānoa Lower Campus, McCully Substation on Lime Street in McCully, Kapahulu Substation on Leahi Avenue in Kapahulu, Kāhala Substation off of Kilauea Avenue in Kāhala, and Wailupe Substation on Kalanianaʻole Highway in Wailupe. The ductline construction and communication cable installation in the public right-of-ways was estimated in the Application to take approximately one month to complete at each substation location. (Hawaiian Electric plans to do the substation work sequentially with some overlap between installations.) The construction work for the Phase 2 Modification is estimated to take approximately 13 months to complete, and about 2½ years from engineering and permitting to in-service.

The proposed scope for the Phase 2 Modification project ("Phase 2 Scope of Work") is described in Exhibit 8 to the Hawaiian Electric's Application, another copy of which is attached hereto. Subsequent to the filing of its Application, Hawaiian Electric determined that telecommunications lines are present in some of the substations involved in the Phase 2 Scope of Work, or that alternative connections to the telecommunications system may be possible. This information, which is summarized below, may present the opportunity to minimize subsurface trenching outside of the substations and, therefore, any potential construction impacts relating to that trenching activity outside of the substations. Hawaiian Electric understands that Hawaiian Telcom will make the final determination regarding connections to its communication system.

Pi'ikoi Substation Upgrades

A Hawaiian Telcom telephone circuit is installed at the substation. Therefore, work would involve extending the existing telecom cable in the substation to the proposed Supervisory Control and Data Acquisition ("SCADA") equipment. No new ductline is required outside of the substation.

Mānoa Substation Upgrades

Pole 10 and another unmarked pole are joint poles that support both Hawaiian Electric and Hawaiian Telcom circuits are located on the Seaview Street side of the substation. A five-foot ductline would be required from either pole to the substation fence line to install a telecom circuit into the substation.

UH Quarry Substation Upgrades

Alternative 1 - A Hawaiian Telcom telephone circuit is installed for Hawaiian Electric's meter located in the University of Hawaii's electrical building, which is part of the UH Quarry Substation. Therefore, work would involve extending the existing telecom cable from the



building to the proposed SCADA equipment. No new ductline would be required outside of the substation.

Alternative 2 – A Hawaiian Telcom handhole is located in the sidewalk on the mauka/Koko Head corner of the substation. A 30-foot ductline would be required from the handhole to the substation fence line to install a telecom circuit into the substation. Alternative 2 may require significantly less coordination with the University of Hawaii. The work would be entirely off of the University roadway and would not require accessing the electrical building.

McCully Substation Upgrades

An overhead Hawaiian Telcom telephone circuit is installed at the substation. Therefore, work would involve replacing the existing telecom cable with a new upgraded cable and once in the substation, the new cable would be extended to the proposed SCADA equipment. No new ductline is required outside of the substation.

Kewalo Substation Upgrades

An existing Hawaiian Electric fiber optic circuit is installed at the substation. Therefore, work would involve installing a new fiber optic cable extension from the existing fiber optic cable to the proposed SCADA equipment. No new ductline is required outside of the substation.

Kapahulu Substation Upgrades

Two Hawaiian Telcom telephone circuits are installed at the substation. Therefore, work would involve extending an existing telecom cable in the substation to the proposed SCADA equipment. No new ductline is required outside of the substation.

Kāhala Substation Upgrades

Alternative 1 - Pole 10, which is a joint pole that supports both Hawaiian Electric and Hawaiian Telcom circuits, is located on the edge of the Hawaiian Electric-owned substation driveway at the entrance of the substation. A 20-foot ductline would be required from Pole 10 to the substation fence line to install a telecom circuit into the substation.

Alternative 2 – An existing joint pole that supports both Hawaiian Electric and Hawaiian Telcom circuits is located inside the substation. Therefore, only a ductline from this pole to the proposed SCADA equipment would be required. It appears Hawaiian Telcom might have an easement from Hawaiian Electric as their circuits run overhead through the substation.

In both Alternatives, no new ductline would be required in the public right-of-way (Kilauea Avenue).



Wailupe Substation Upgrades

A Hawaiian Telcom telephone circuit is installed at the substation. Therefore, work would involve extending the existing telecom cable in the substation to the proposed SCADA equipment. No new ductline is required outside of the substation.

Switch #4640 Upgrade

Alternative 1 – Install radio equipment on the existing pole that supports Switch #4640 and other poles along McCully Street. (A radio signal needed from Switch #4640 to McCully Substation on Lime Street one block Ewa of McCully Street). This alternative would require restriction of on-street parking adjacent to each pole on McCully Street during installation.

Alternative 2 – There is an overhead Hawaiian Telcom connection from an existing overhead line running perpendicular to McCully Street along Young Street. There is an existing messenger wire approximately 30 feet from these circuits to the pole that supports Switch #4640. Therefore, the new overhead connection would be installed on the messenger wire. Thus, no trenching would be required and no new visual element introduced to the area. One lane of traffic would be blocked and on-street parking would be restricted to install the overhead connection.

Ward Avenue Upgrades

Since communications lines were known to be present within the Ward Avenue facility at the time Hawaiian Electric's application was filed, no additional updates are necessary.

II. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

A. Land Use

1. Existing Conditions

Land use designations for the Phase 2 Modification were identified by reviewing the State land use district designations,³ the Hawai'i Community Development Authority ('HCDA') Mauka Area Plan and Mauka Area Rules,⁴ the Primary Urban Center Development Plan,⁵ and the City and County of Honolulu Land Use Ordinance (LUO).⁶ The Phase 2 Modification area is within the State-designated Urban District and within the City and County of Honolulu's Primary Urban Center. Land uses in the project area include: residential, business, parking, gas station,

³ Hawai'i Statewide GIS Program Internet Website, <http://www.state.hi.us/dbedt/gis/>. Accessed June 2010.

⁴ *Mauka Area Plan Kakaako Community Development District Honolulu, Hawai'i*. Hawaii Community Development Authority website, <http://www.hcdaweb.org>. Accessed June 2010.

⁵ *Primary Urban Center Development Plan*. City and County of Honolulu. Department of Planning and Permitting website <http://www.honoluluapp.org>. Accessed June 2010.

⁶ City and County of Honolulu. Department of Planning and Permitting. Honolulu Land Information System (HOLIS) Website, <http://gis.hicentral.com>. Accessed in June 2010.



grocery store, office, retail, restaurants, and vacant units. Table 1 summarizes the sections of the project area that are within Special Districts and lists the associated zoning.

Table 1. Summary of Special Districts and Associated Zoning

Section of Project Area	Special District	Zoning
Pi'ikoi Substation	Punchbowl Special District	A-2 (Medium Density Apartment)
Mānoa Substation	None	R-5 (Residential)
UH Quarry Substation	None	R-5 (Residential)
McCully Substation	None	A-2 (Medium Density Apartment)
Kewalo Substation, Archer Substation	Kaka'ako Community Development District, under the authority of the State through the Hawai'i Community Development Authority	Mixed-use zone commercial emphasis (MUZ-C)
Kapahulu Substation	Diamond Head Special District	R-3.5 Residential
Kāhala Substation	None	R-7.5 (Residential)
Wailupe Substation	None	R-7.5 (Residential)
Switch #4640	None	BMX-3 (Community Business District)

Source: City and County of Honolulu, Department of Planning and Permitting, HOLIS Internet Website, <http://gis.hicentral.com>.

2. Potential Impacts and Actions to Minimize Impacts

Potential impacts to land use were evaluated by comparing the Phase 2 Modification to the relevant State and City and County of Honolulu policies and controls.

a. Construction

The Phase 2 Modification would have no significant impact on land use; it would support and be consistent with the State and County plans described in the Final EA.

b. Operation

Operation of the Phase 2 Modification would not result in land use changes within the project areas.



B. Infrastructure

1. Electrical

Existing conditions and potential impacts to electrical infrastructure remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

2. Potable Water

Existing conditions and potential impacts to the potable and firefighting water system on O'ahu remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

3. Wastewater

Existing conditions and potential impacts to the wastewater system remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

4. Drainage

Existing conditions and potential impacts to the drainage system infrastructure remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

5. Communications

Existing conditions and potential impacts to communications infrastructure remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

6. Solid Waste

Existing conditions and potential impacts to solid waste facilities remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

C. Roads and Traffic

1. Existing Conditions

Trenching outside the substations may occur at Kāhala Substation, Mānoa Substation and UH Quarry Substation. At these locations, Hawaiian Telcom will make the final determination regarding connections to its communication system. This update assumes that construction of ductlines for communications connections at the Mānoa Substation will require that,



during the period of construction, on-street parking would be temporarily restricted and that pedestrian traffic will be temporarily disrupted. Construction of up to 100 feet of ductline (approximately 5 feet outside of the substation) at the Mānoa Substation is assumed to last approximately two weeks. During this period, daytime activities are assumed to affect traffic for about five days. Work would be scheduled during daylight hours between 9:00 A.M. and 3:00 P.M. Although trenching outside of the substation may occur at the Kāhala and UH Quarry Substations, it is not expected to disrupt vehicular or pedestrian traffic, or on-street parking.

For work at Switch #4640, this update assumes that no trenching will be required, but that parking will be temporarily restricted and, depending on the alternative that is selected, one lane of traffic may be temporarily blocked while new overhead connections are made. Work on the overhead connection is assumed to last approximately five days, and would occur during the daytime between 9:00 A.M. and 3:00 P.M.

Phase 2 Modification construction activities will not occur outside the Pi'ikoi Substation, Wailupe Substation, McCully Substation, Kapahulu Substation, Kewalo Substation and the Ward Avenue facility. Therefore no disruptions to vehicular or pedestrian traffic will occur at these locations.

a. Construction

At the Mānoa Substation, on-street parking may be restricted during construction and pedestrian traffic may be disrupted. To minimize these impacts, Hawaiian Electric will post temporary signage notifying drivers in advance of the parking restriction. For pedestrians, Hawaiian Electric will either provide a temporary pathway around the work area or post signs that pedestrians should use the walkway on the opposite side of the street.

At Switch #4640, this letter assumes that parking will be temporarily restricted and, depending on the alternative selected, one lane of traffic may be temporarily blocked while the new overhead connections are made. To minimize these impacts, Hawaiian Electric will post temporary signage notifying drivers in advance of the parking restriction. For pedestrians, Hawaiian Electric will either provide a temporary pathway around the work area or post signs that pedestrians should use the walkway on the opposite side of the street.

b. Operation

The Phase 2 Modification involves the installation and/or operation of underground and overhead communication circuits in the public right of way. After installation is completed and the circuits are operational, no impacts on traffic would occur other than infrequent maintenance and emergency repairs. Potential impacts on traffic would be infrequent and temporary and, therefore, not significant.



D. Public Health and Safety

1. Noise Environment

Existing conditions and potential impacts to the noise environment remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

a. Potential Impacts and Actions to Minimize Impacts

(1) Construction

No significant impacts from noise would occur. Construction work would be conducted in compliance with applicable noise regulations.

Typical noise levels associated with common construction equipment can range from 80 to 95 dBA at 50 feet from the source. Noise levels would vary in location and duration and may be continuous, fluctuating, or impulsive.⁷ Noise sources associated with the types of construction activities planned for the Phase 2 Modification, estimated duration, and methods to minimize potential impacts are identified in Table 3.

Table 3. Construction Noise Sources and Actions to Minimize Impacts

Construction Activity	Noise Sources and Noise Levels¹	Actions to Minimize Impacts
Hand Trenching	Jackhammers – 88 dBA Equipment motors – 88 dBA Human voices – 70 dBA	Daytime work only. Fit jackhammers with manufacturer-approved exhaust muffler. Reduce equipment idling when not being used. Establish crew communication procedures to minimize the need to shout over equipment.
Ductline Construction (Conventional Trenching), Manhole Installation	Pavement cutting/excavating equipment – 85 dBA Backup alarms – 87 or 107 dBA Human voices – 70 dBA	Reduce equipment idling when not being used. Use manually adjustable or self-adjusting backup alarms, and configure construction site to minimize the need to reverse. Work during the day where possible. Establish crew communication procedures to minimize the need to shout over equipment.

⁷ Typical noise levels in dBA, at 50 feet, as identified in Table 2 of the Federal Highway Administration paper, http://ops.fhwa.dot.gov/wz/workshops/accessible/Schexnayder_paper.htm, accessed June 7, 2010.



Construction Activity	Noise Sources and Noise Levels ¹	Actions to Minimize Impacts
Sidewalk or driveway paving	Paving equipment – 80 to 89 dBA	Reduce equipment idling when not being used.
	Backup alarms – 87 or 107 dBA	Use manually adjustable or self-adjusting backup alarms, and configure construction site to minimize the need to reverse.
	Human voices – 70 dBA	Establish crew communication procedures to minimize the need to shout over equipment.
Substation Modifications	Truck motors – 88 dBA	Reduce truck idling when not being used.
	Human voices – 70 dBA	Use manually adjustable or self-adjusting backup alarms, and configure construction site to minimize the need to reverse.
	Cranes – 83 to 88 dBA	Establish crew communication procedures to minimize the need to shout over equipment.

- 1 Typical noise levels in dBA, at 50 feet, as identified in Table 2 of the Federal Highway Administration paper, *Effective Noise Control During Nighttime Construction*. http://ops.fhwa.dot.gov/wz/workshops/accessible/Schexnayder_paper.htm, accessed June 7, 2010.

Noise generated during construction activities is generally short in duration. For the construction, contract provisions would designate acceptable work hours and identify methods to enforce compliance. Construction work would be conducted in compliance with State of Hawai'i noise control rules. Impacts on construction workers would be minimized by compliance with OSHA construction noise standards.

For construction activities that may produce excessive noise levels, a noise permit or noise variance, as applicable, would be obtained from the State of Hawai'i DOH. Approval of the permit or variance may require use of noise attenuation devices on construction equipment or further limits on construction hours and activities. Backup alarms on construction equipment may be disabled if other inaudible safety measures are used, as allowed by law. Scheduling noise-generating activities in residential areas only during the day and informing crew members about moderating voice levels would minimize noise impacts.

(2) Operation

No significant impacts to noise receptors would occur with operation of the Phase 2 Modification. Maintenance or emergency repair activities may generate short-term noise associated with vehicles, much like the existing vehicle traffic on roadways. No actions to minimize impacts are required.



2. Emergency Response

This section addresses potential effects on police, fire, and medical emergency responsiveness.

a. Existing Conditions

The HPD and Honolulu Fire Department (HFD) serve the entire island of O'ahu, with stations designated to serve smaller districts. Construction of the Phase 2 Modification would not affect entrances to or egress from police and fire stations.

The Waikiki-Kapahulu Fire Station Number 7, with its driveway entrance on Kapahulu Avenue, is located makai of the Kapahulu Substation. Other than the foregoing, there are no police stations, fire stations, hospitals or healthcare facilities immediately adjacent to areas where construction might take place for any of the Phase 2 Modification work. The major emergency medical facility in closest proximity to any Phase 2 Modification project area is Straub Hospital, located on King Street at Ward Avenue. Emergency vehicle access to Straub Hospital's urgent care services is from Hotel Street and would not be affected by construction of the Phase 2 Modification.

b. Potential Impacts and Actions to Minimize Impacts

(1) Construction

No significant impacts on emergency responders are expected under the Phase 2 Modification. Hawaiian Electric would coordinate with emergency responders as needed.

(2) Operation

No impacts on emergency responders would occur from the operation of the Phase 2 Modification.

3. Schools

a. Existing Conditions

The following schools are adjacent to the Phase 2 Modification construction areas: Loveland Academy Preschool and Elementary School is diagonal (mauka Diamond Head) of Pi'ikoi Substation; Kalani High School is adjacent to the mauka side of the Wailupe Substation; the University of Hawai'i ROTC buildings and Murakami Baseball Stadium are adjacent to the UH Quarry Substation; and the Hawaii Center for Deaf and Blind is located Diamond Head of the Kapahulu Substation.



b. Potential Impacts and Actions to Minimize Impacts

(1) Construction

Work at the Pi'ikoi Substation, Wailupe Substation and Kapahulu Substation would occur entirely within the substations. At the UH Quarry Substation, the second alternative would require 30 feet of ductline from a handhole to the substation. Since the Phase 2 Modification construction activities at these substations would be typical of work that periodically occurs at these substations, no significant impacts from the Phase 2 Modification on the above schools and their occupants would occur.

No significant noise and dust would result from shallow subsurface construction of ductlines within and, at the UH Quarry Substation, possibly outside of the substation. Construction work would be conducted in compliance with State of Hawai'i noise and fugitive dust control measures.

(2) Operation

No impacts to schools are expected from operation of the Phase 2 Modification.

E. Soils and Topography

Existing conditions and potential impacts to soils and topography remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

F. Water Resources

Water resources include groundwater and surface water systems in the vicinity of the Phase 2 Modification and alternative alignments.

1. Existing Conditions

a. Groundwater

The Phase 2 Modification project areas overlie the Pālolo, Nu'uanu and Waialae aquifer systems of the Honolulu aquifer sector. These are basal aquifers, containing fresh water in contact with seawater.

The Ward Avenue Facility, Kewalo Substation, 46 kV Switch #4640 and McCully Substation overlie the Nu'uanu aquifer system. The Pi'ikoi, UH Quarry and Mānoa Substations



overlie another portion of the Nu‘uanu aquifer system.⁸ The Kapahulu Substation overlies the Pālolo aquifer system. The Kāhala and Wailupe Substations overlie the Waialae aquifer.

Most of the Phase 2 Modification project area is located inland of the State of Hawai‘i DOH-established Underground Injection Control (UIC) line, which runs along Pākī Boulevard, Ala Wai Boulevard to Kalākaua, Kapi‘olani Boulevard to South Street, and then along King Street. The UIC program was established to protect the quality of underground sources of drinking water from pollution by subsurface disposal of fluids.⁹ The UIC line is the boundary between non-drinking water aquifers (generally seaward of the UIC line) and underground sources of drinking water (generally inland of the UIC line). Given that only shallow subsurface trenching is expected for communications ductline construction, no impacts are expected to drinking or injection wells

b. Surface Water

There are no streams, drainage canals or wetlands adjacent to any of the Phase 2 Modification work areas with the exception of a storm drain inlet at the makai/Ewa corner of the Wailupe Substation, a storm drain inlet at the mauka/Diamond Head corner of the McCully Substation, and a storm drain inlet Diamond Head of the Kapahulu Substation.

Storm water in the project area drains to the MS4 system, which has storm drain inlets along most of the roads in the project area. MS4 storm drains in the Phase 2 Modification areas outlet to Kewalo Basin, Ala Wai Boat Harbor, Makiki Stream, and Ala Wai Canal, Waialae-Iki Stream¹⁰ and off shore waters of Kāhala Beach.¹¹ The description of notable surface waters in the Final EA remains unchanged.

2. Potential Impacts and Actions to Minimize Impacts

The Phase 2 Modification and the alternative alignments would not involve area-wide dewatering for construction and would not result in a net increase in impervious surfaces. Therefore, neither a net decrease in infiltration to groundwater nor a net increase in surface water runoff would occur.

a. Construction

Groundwater. No significant impacts to drinking water or groundwater would result from the limited shallow trenching associated with the Phase 2 Modification.

⁸ Mink and Lau. 1990. *Aquifer Identification and Classification for O‘ahu: Groundwater Protection Strategy for Hawai‘i, Technical Report No. 179.*

⁹ Hawai‘i Administrative Rules, Title 11, Chapter 23. September 22, 1992.

¹⁰ City and County of Honolulu, Department of Design and Construction. *Kalaniana‘ole Highway Sewer System Improvements Project Final Environmental Assessment*, June 25, 2009.

¹¹ City and County of Honolulu, Department of Public Works. *Ulili and Elepaio Streets Drainage Improvements Revised Final Environmental Impact Statement*, March 22, 1983.



Surface Water. No runoff to surface water or storm drains is expected to occur from the limited shallow subsurface trenching involved in the Phase 2 Modification construction activities. Erosion barriers, such as silt fences, would prevent any runoff. Although it is unlikely an NPDES construction stormwater permit would be required for this project, if necessary, a permit would be obtained and a BMP plan would be developed to address potential pollution runoff from construction work.

b. Operation

No significant adverse impacts to groundwater or surface waters would be associated with operation of the improvements.

G. Air Quality

Existing conditions and potential impacts to air quality remain unchanged and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

H. Cultural Resources

I. Cultural Resources

1. Archaeological Resources

Hawaiian Electric retained Cultural Surveys Hawai'i, Inc. ("Cultural Surveys") to conduct an archaeological literature review and field inspection for the Phase 2 Modification underground construction areas. The Cultural Surveys report is not complete as of the date of this letter, but will be made available upon request when it is complete. Although the report documenting the survey is being finalized at this time, Cultural Resources has completed its survey and has concluded that the Phase 2 Modification underground construction will have "no effect" on cultural resources and that no further archaeological study is recommended.

Pi'ikoi Substation

Cultural Surveys believes the probability of significant finds is quite low and recommends no further archaeological work at the Pi'ikoi Substation and vicinity

UH Quarry Substation

Cultural Surveys believes the probability of significant finds is quite low and recommends no further archaeological work at the UH Quarry Substation and vicinity

Mānoa Substation

Cultural Surveys believes the probability of significant finds is quite low and recommends no further archaeological work at the Mānoa Substation and vicinity.



Kāhala Substation

Cultural Surveys believes the probability of significant finds is quite low and recommends no further archaeological work at the Kāhala Substation and vicinity.

Wailupe Substation

Cultural Surveys believes the probability of significant finds is quite low and recommends no further archaeological work at the Wailupe Substation and vicinity.

a. Construction

As discussed above, the probability of significant finds during Phase 2 Modification construction is low. If, in the process of subsurface construction activities in these areas, subsurface archaeological resources may be encountered. Any subsurface archaeological features encountered during construction and any inadvertent burials found will be treated in accordance with law.

b. Operation

Once the new telecommunications circuits are in place, no additional subsurface disturbance is anticipated, with the exception of potential future emergency work to make necessary repairs. Emergency construction work would include trenching in the same areas that would have already been excavated as part of the Phase 2 Modification; hence, no impacts during operation are expected.

2. Traditional Cultural Practices

A Cultural Impact Assessment ("CIA") was prepared in August 2004 by Pacific Legacy, Inc., and discussed in the Final EA (Appendix C2 to the Final EA). The conclusions of that assessment have not changed.

Cultural impacts are not expected to occur with the Phase 2 Modification. Shallow ductline construction will occur entirely within or adjacent to the substations at Pi'ikoi, Wailupe, UH Quarry, McCully, Kapahulu, Kewalo and the Ward Avenue facility where no public access is allowed. Limited trenching to install new communications lines may occur at the Kāhala and Mānoa Substations, and a new overhead communications connection may be installed at Switch #4640. The work in these areas will occur in residential and urban areas, and the ductline construction and connection work will be similar to other utility construction and repair activity that occurs daily throughout Honolulu. Once installed, operation of the new communications lines and switches will not have a cultural impact.

Once the ductlines and circuits are in place, no additional subsurface disturbance is anticipated, with the exception of potential future emergency work to replace broken sections of ductline. Emergency construction work would include trenching in the same areas that would have already been excavated as part of Phase 2 Modification or earlier utility installation; hence, no impacts during operation are expected.



3. Historic Resources

State historic properties are identified in HAR 13-198 as any building, structure, object, district, area, or site that is significant in the history, architecture, archaeology, or culture of the State, its communities, or the nation. National historic properties meet criteria identified in 36 CFR Part 60.4. Historic sites that meet eligibility criteria may be listed on the appropriate State or National Register of Historic Places, or both. Archaeological sites are discussed in section 4.9.1. This section addresses buildings, structures, and sites other than archaeological resources that are designated as historic properties.

There are no historic resources adjacent to the Phase 2 Modification construction areas. There will, therefore, be no potential impacts to historic resources and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

J. Visual and Aesthetic Resources

1. Existing Conditions

Visual resources include scenic vistas, scenic overlooks, unique topography, or visual landmarks having scenic value. Mature trees, discussed below, can be contributing elements to this resource. The City and County of Honolulu's Development Plan (DP) defines public views as "views along streets and highways, mauka-makai view corridors, panoramic and significant landmark views from public places, views of natural feature, heritage resources, and other landmarks, and view corridors between significant landmarks."¹² Impacts to visual resources are based on the degree and duration of disturbance to the visual quality of an area.

The proposed project area consists of existing streets in a mixed-use urban setting. Building types range from single-family homes to high-rise residential and commercial buildings. Roadways nearby the Phase 2 Modification areas are from two to four lanes in width. Landscaping along the roadways is inconsistent. Views are generally confined to the viewer's immediate surroundings.

There are no historic resources adjacent to the Phase 2 Modification construction areas. There will therefore be no potential impacts to historic resources, and the Final EA conclusions regarding construction and operation of the Phase 2 Modification are unaffected.

a. Potential Impacts and Actions to Minimize Impacts

(1) Construction

No significant impacts on visual and aesthetic resources would be associated with the Phase 2 Modification. Construction related activities would be temporary. Hawaiian Electric

¹² City and County of Honolulu. Revised Ordinances of Honolulu, *Chapter 24, Development Plans*.



will coordinate with its arborist to avoid affecting root structures of trees along the Phase 2 Modification construction areas.

(2) Operation

No significant impacts on visual and aesthetic resources would occur. The communications lines would be underground with no visual obstructions.

K. Biological Resources

1. Existing Conditions

The area affected by the Phase 2 Modification consists of existing paved City and County of Honolulu streets and adjacent sidewalks or landscaping. No threatened or endangered species or their habitats are known to exist here. Hawaiian Electric reviewed the list of Exceptional Trees of Oahu¹³ and determined that no exceptional trees are located within or adjacent to any areas of potential construction. Exceptional trees are defined as “a tree or grove of trees with historic or cultural value, or which by reason of its age, rarity, location, size, esthetic quality or endemic status has been designated by the city council as worthy of preservation” by ROH 41-13, Protective Regulations for Exceptional Trees.¹⁴ Animals common to urbanized areas of Honolulu are mainly alien birds, rodents, mammals, and insects.

2. Potential Impacts and Actions to Minimize Impacts

a. Construction

Construction activities within existing streets would have no effect on biological resources in the area. Hawaiian Electric would coordinate with its arborist to avoid affecting root structures of trees along the Phase 2 Modification alignment. If landscaped areas are disturbed, they would be restored by Hawaiian Electric.

b. Operation

Operational activities would have no effect on biological resources.

L. Socioeconomic Environment

This section assesses construction-related and operational impacts of the Phase 2 Modification.

¹³ “Exceptional Trees of Oahu” (rev. 02-24-2010), <http://www.honolulu.gov/parks/exceptionaltrees.htm>. Accessed May 28, 2010.

¹⁴ Revised Ordinances of Honolulu, Chapter 41, http://www.co.honolulu.hi.us/refs/roh/41a1_25.htm. Accessed May 28, 2010.



1. Existing Conditions

The proposed project area is located in O'ahu's urban area. Residential uses account for a majority of the surroundings of the Phase 2 Modification areas. The McCully Shopping Center is Diamond Head of the McCully Substation. Businesses located adjacent to Switch #4640 work areas include Central Pacific Bank, Suchi Company and Little Caesar's, On On Restaurant, and Zap. Various automotive related businesses are adjacent to work areas at the Kewalo Substation

a. Construction Activity

In the 1980s, government construction spending accounted for as much as 30 percent of all construction. As of 2003, the share of government spending on construction had dropped to 15 percent. Roadway construction projects have taken place in recent years on most streets in the project area.

A 1994 study of government spending by development plan area suggested that spending per capita was appreciably higher for the older, established communities of O'ahu than for the new growth areas in 'Ewa and Central O'ahu. While the project area has been relatively stable in terms of population and development, it is likely to experience new residential, commercial, and institutional developments in the vicinity that have been announced or are now underway.

b. Energy Use

As O'ahu's sole electric utility, Hawaiian Electric responds to demand for about 7.5 billion kilowatts of power annually. Commercial users account for most of the energy use. Residential energy use has been growing, especially when measured in terms of demand per resident. While energy use trend statistics are not specifically available for the project area, regional data from Hawaiian Electric suggests that the distribution of energy use has changed little over the last decade.

2. Potential Impacts and Actions to Minimize Impacts

a. Construction

No significant adverse socioeconomic impacts would be associated with the Phase 2 Modification construction activities.

Population Impacts. Population impacts arise when a project attracts new residents to the island or region. There would be no measurable change in population due to short-term construction. With no population change and no permanent new employment, no housing impacts are expected.

Impacts on Project Area Residents. Project area residents would not experience any significant economic impacts during the Phase 2 Modification shallow trenching. Management measures would assure vehicular and pedestrian access to and from residential properties. Other



potential impacts on residents—such as noise and traffic—are discussed in other sections of this document.

Impacts on Employment and Income. The Phase 2 Modification involves less construction than the originally proposed Phase 2 alternative. It is therefore assumed that less than the 106 direct jobs associated with project construction estimated in the Final EA would result from construction of the Phase 2 Modification, and less than the \$11.1 million total wages associated with project construction estimated in the Final EA.

Since funding from the American Recovery and Reinvestment Act (“ARRA”) will be used for the Phase 2 Modification, Hawaiian Electric will follow the “Guidebook for ARRA Smart Grid Program Metrics and Benefits,” *see* Hawaiian Electric’s Response to CA-IR-7, to provide the U.S. Department of Energy (“DOE”) with information regarding job creation and marketplace innovation. As part of this process, a Benefits and Metrics Team from DOE will work with Hawaiian Electric’s project team to customize the data collection and reporting requirements for this project using structured templates. Hawaiian Electric is presently working with DOE to submit a Draft Metrics and Benefits Reporting Plan. For job creation, the Build Metric will require information regarding new jobs created and retained as a result of this project. For marketplace innovation, the Build Metric will require information regarding new products, services and programs associated with this project.

Impacts on Businesses in the Project Area.

Trenching outside the substations may occur at Kāhala Substation and Mānoa Substation. There are no businesses adjacent to any potential construction areas at these substations.

For work at the Switch #4640, this update assumes that no trenching will be required, but that on-street parking will be temporarily restricted and/or one lane of traffic will be temporarily blocked while new overhead connections are made. Businesses in the immediate vicinity of the overhead connection areas are Central Pacific Bank, Sushi Company and Little Caesar’s, On On Restaurant and Zap. The overhead connections will not affect these businesses because no driveways or access will be blocked, and although on-street parking may be restricted, each of these businesses has its own parking lot.

Trenching outside the substations that would disturb roads and pedestrian or vehicular traffic is not anticipated at the following locations: Piikoi Substation, Wailupe Substation UH Quarry Substation, McCully Substation, Kapahulu Substation, Kewalo Substation and the Ward Avenue facility. Work inside these substations will not involve disruption of electrical or telecommunications service to nearby businesses, and therefore will not have an impact on those businesses.

M. Electric and Magnetic Fields (EMF)

As the Phase 2 Modification will not involve the construction of new transmission lines, it will not create any new electric and magnetic fields.



III. SECONDARY AND CUMULATIVE IMPACTS


The conclusions in the Final EA regarding secondary and cumulative impacts remain unchanged. The only locations where work may occur outside the substations are at Kāhala Substation, Mānoa Substation, and UH Quarry Substation. Work will also occur to connect overhead lines at Switch #4640. At the remaining locations where Phase 2 Modification work will occur, work will be conducted entirely within the substations, therefore, no contributions to secondary or cumulative impacts outside the substations are expected to occur.

In regard to the work at the Kāhala Substation, Mānoa Substation, UH Quarry Substation and Switch #4640, Hawaiian Electric has been unable to identify further actions by third parties at these locations for consideration in the cumulative impacts analysis

Since the Phase 2 Modification will result in less underground ductline construction than in the anticipated scope of work for the original Phase 2 construction, as described in section 1 above, cumulative impacts are expected to be less than quantified in the Final EA, which determined that cumulative impacts were either nonexistent or not significant.

The conclusions in the Final EA regarding the Finding of No Significant Impact determination and the reasons supporting that determination remain unchanged.

Sincerely,


for Dean Matsuura
Manager
Regulatory Affairs

Attachment:

Exh. 8 to Hawaiian Electric's Application filed 4/19/10

c: Division of Consumer Advocacy (1 copy)
Henry Q Curtis (1 copy)



**East Oahu Transmission Project Phase 2 Modification ("Phase 2 Modification")
Project Description**

The proposed scope for the Phase 2 Modification project includes: 1) the installation of Supervisory Control and Data Acquisition ("SCADA") equipment, the upgrade/replacement of 46kV switch operators, and the interconnection into existing communication networks at eight distribution substations served by Pukele Substation (i.e., Piikoi, Manoa, UH Quarry, McCully, Kewalo, Kapahulu, Kahala, Wailupe); 2) the installation of a 46kV pole-mounted switch equipped with a motor-operator and SCADA functionality and a pole-mounted radio system on existing poles in the McCully area; and 3) the installation and integration of smart grid technology into Hawaiian Electric's Energy Management System ("EMS") with cyber security features based on industry accepted best practices. The locations of the various work for the Phase 2 Modification project are shown on page 6.

Piikoi Substation Upgrades

The Piikoi Substation upgrades involve: (1) the replacement of one existing 15kV metal-clad switchgear with a new 15kV metal-clad outdoor switchgear with SCADA functionality and associated microprocessor-based relay protection; (2) the replacement of three existing hydraulic 46kV switch operators with three motor-operators; (3) the installation of associated control wiring; (4) the installation of one outdoor telecom cabinet equipped with Ground Potential Rise ("GPR") telecom protective equipment; (5) the installation of communication circuits; and (6) the installation of a telephone circuit by a third party.

Within the Piikoi Substation boundaries, Hawaiian Electric will construct approximately 100 feet of 1-2" ductline for control wiring; one 3' X 5' concrete pad for the outdoor telecom cabinet; one 2' X 4' handhole; and approximately 100 feet of 2-2" underground ductline for the communication and telephone circuits.

Outside of the Piikoi Substation in the public right-of-way, Hawaiian Electric will construct one 2' X 4' handhole and approximately 100 feet of 2-2" underground ductline for the telephone circuit.

See attached page 7 for an illustration of the typical work to be performed at each substation.

Manoa Substation Upgrades

The Manoa Substation upgrades involve: (1) the replacement of two existing 15kV metal-clad switchgears with two new 15kV metal-clad outdoor switchgears with SCADA functionality and associated microprocessor-based relay protection; (2) the replacement of three existing hydraulic 46kV switch operators with three motor-operators; (3) the installation of associated control wiring; (4) the installation of three sets of 46kV switch interrupters; (5) the

installation of one outdoor telecom cabinet equipped with GPR telecom protective equipment; (6) the installation of communication circuits; and (7) the installation of a telephone circuit by a third party.

Within the Manoa Substation boundaries, Hawaiian Electric will construct approximately 200 feet of 1-2" ductline for control wiring; one 3' X 5' concrete pad for the outdoor telecom cabinet; one 2' X 4' handhole; and approximately 100 feet of 2-2" underground ductline for the communication and telephone circuits.

Outside of the Manoa Substation in the public right-of-way, Hawaiian Electric will construct one 2' X 4' handhole and approximately 100 feet of 2-2" underground ductline for the telephone circuit.

UH Quarry Substation Upgrades

The UH Quarry Substation upgrades involve: (1) the replacement of two existing 15kV metal-clad switchgears with two new 15kV metal-clad outdoor switchgears with SCADA functionality and associated microprocessor-based relay protection; (2) the replacement of two existing hydraulic 46kV switch operators with two motor-operators; (3) the installation of associated control wiring; (4) the installation of two sets of 46kV switch interrupters; (5) the installation of one outdoor telecom cabinet equipped with GPR telecom protective equipment; (6) the installation of communication circuits; and (7) the installation of a telephone circuit by a third party.

Within the UH Quarry Substation boundaries, Hawaiian Electric will construct approximately 150 feet of 1-2" ductline for control wiring; one 3' X 5' concrete pad for the outdoor telecom cabinet; one 2' X 4' handhole; and approximately 100 feet of 2-2" underground ductline for the communication and telephone circuits.

Outside of the UH Quarry Substation, Hawaiian Electric will construct one 2' X 4' handhole and approximately 100 feet of 2-2" underground ductline for the telephone circuit.

McCully Substation Upgrades

The McCully Substation upgrades involve: (1) the replacement of two existing hydraulic 46kV switch operators with two motor-operators; (2) the installation of associated control wiring; and (3) the installation of communication circuits utilizing existing Hawaiian Electric communication facilities.

Within the McCully Substation boundaries, Hawaiian Electric will construct approximately 50 feet of 1-2" ductline for control wiring; one 2' X 4' handhole; and approximately 100 feet of 2-2" underground ductline for the communication circuits.

Kewalo Substation Upgrades

The Kewalo Substation upgrades involve: (1) the replacement of one existing 15kV metal-clad switchgear with a new 15kV metal-clad outdoor switchgear with SCADA functionality and associated microprocessor-based relay protection; (2) the replacement of three existing hydraulic 46kV switch operators with three motor-operators; (3) the installation of associated control wiring; (4) the installation of one set of 46kV switch interrupters; (5) the installation of a fiber optic cable to interconnect into Hawaiian Electric's existing fiber optic network located at the Kewalo Substation; and (6) the installation of an outdoor telecom equipment cabinet.

Within the Kewalo Substation boundaries, Hawaiian Electric will construct approximately 100 feet of 1-2" ductline for control wiring; one 5' X 5' concrete pad for the outdoor telecom cabinet; one 2' X 4' handhole; and approximately 100 feet of 1-2" underground ductline for the fiber optic cable.

Kapahulu Substation Upgrades

The Kapahulu Substation upgrades involve: (1) the replacement of two existing 15kV metal-clad switchgears with two new 15kV metal-clad outdoor switchgears with SCADA functionality and associated microprocessor-based relay protection; (2) the replacement of three existing hydraulic 46kV switch operators with three motor-operators; (3) the installation of associated control wiring; (4) the installation of three sets of 46kV switch interrupters; (5) the installation of one outdoor telecom cabinet equipped with GPR telecom protective equipment; (6) the installation of communication circuits; and (7) the installation of a telephone circuit by a third party.

Within the Kapahulu Substation boundaries, Hawaiian Electric will construct approximately 200 feet of 1-2" ductline for control wiring; one 3' X 5' concrete pad for the outdoor telecom cabinet; one 2' X 4' handhole; and approximately 100 feet of 2-2" underground ductline for the communication and telephone circuits.

Outside of the Kapahulu Substation in the public right-of-way, Hawaiian Electric will construct one 2' X 4' handhole and approximately 100 feet of 2-2" underground ductline for the telephone circuit.

Kahala Substation Upgrades

The Kahala Substation upgrades involve: (1) the replacement of two existing 15kV metal-clad switchgears with two new 15kV metal-clad outdoor switchgears with SCADA functionality and associated microprocessor-based relay protection; (2) the replacement of two existing hydraulic 46kV switch operators with two motor-operators; (3) the installation of associated control wiring; (4) the installation of two sets of 46kV switch interrupters; (5) the installation of one outdoor telecom cabinet equipped with GPR telecom protective equipment; (6) the installation of communication circuits; and (7) the installation of a telephone circuit by a

third party.

Within the Kahala Substation boundaries, Hawaiian Electric will construct approximately 150 feet of 1-2" ductline for control wiring; one 3' X 5' concrete pad for the outdoor telecom cabinet; one 2' X 4' handhole; and approximately 100 feet of 2-2" underground ductline for the communication and telephone circuits.

Outside of the Kahala Substation, Hawaiian Electric will construct one 2' X 4' handhole and approximately 100 feet of 2-2" underground ductline for the telephone circuit.

Wailupe Substation Upgrades

The Wailupe Substation upgrades involve: (1) the replacement of one existing 46kV circuit breaker with one new 46kV circuit breaker; (2) the installation of associated control wiring; (3) the installation of one outdoor telecom cabinet equipped with GPR telecom protective equipment; (4) the installation of communication circuits; and (5) the installation of a telephone circuit by a third party.

Within the Wailupe Substation boundaries, Hawaiian Electric will construct approximately 100 feet of 1-2" ductline for control wiring; one 3' X 5' concrete pad for the outdoor telecom cabinet; one 2' X 4' handhole; and approximately 100 feet of 2-2" underground ductline for the communication and telephone circuits.

Outside of the Wailupe Substation, Hawaiian Electric will construct one 2' X 4' handhole and approximately 100 feet of 2-2" underground ductline for the telephone circuit.

Switch #4640 Upgrade

The Switch #4640 upgrade involves: (1) the replacement of one existing 46kV, 800 amp, manual group-operated, disconnect switch with a new 46kV 800 amp, motor group-operated, disconnect switch; (2) the installation of a pole mounted SCADA unit; and (3) the installation of a pole-mounted radio system on existing poles to interconnect into Hawaiian Electric's existing fiber optic network located at McCully Substation.

The pole-mounted radio system will be installed in compliance with the National Electrical Safety Code ("NESC"), 2002 Edition, as modified by Hawaii Administrative Rules §6-73-21(1).

Ward Avenue Upgrades

The Ward Avenue upgrades involve: (1) the installation and integration of Siemens smart technology equipment into Hawaiian Electric's existing EMS at Ward Avenue with cyber security features based on industry accepted best practices; (2) the building of visualization screens in the existing EMS for the eight distribution substations and Switch #4640; and (3) the

installation of communication equipment to interconnect into Hawaiian Telcom's frame relay communications network and Hawaiian Electric's existing fiber optic network.

Operational Description

With the Phase 2 Modification installed, various 46kV switches in the Pukele Substation service area can be remotely monitored and controlled by the smart technology equipment integrated with the EMS. This is accomplished by hard-wiring the control mechanisms of the switches to the SCADA equipment in the field. The SCADA equipment communicates through communication networks back to the Ward Avenue facility, where the smart technology equipment will be integrated with the EMS through software and hardware interfaces. Therefore, through the communication networks, control connectivity is established between switches in the field and the smart technology equipment at the Ward Avenue facility.

On a 24/7 basis, switch status and line loading information from the field SCADA equipment will continually be fed into the smart technology equipment through communication networks. When an abnormal condition occurs on the 46kV system, the smart technology will automatically evaluate the information and process the appropriate algorithm. Once the algorithm is processed, the smart technology will initiate sequential switching commands to mitigate the abnormal condition. The switching commands will automatically be sent through the communication networks to the various field installed SCADA equipment. The SCADA equipment then sends signals to the switches to open or close. This entire process is estimated to take approximately one minute to several minutes. The visualization screens that would be installed in the EMS as part of this project would display the system changes (e.g., switches opening or closing) so the dispatcher can monitor what is happening on the system. There will be an override capability built into the smart technology to allow a dispatcher to intervene in the switching process, if necessary.

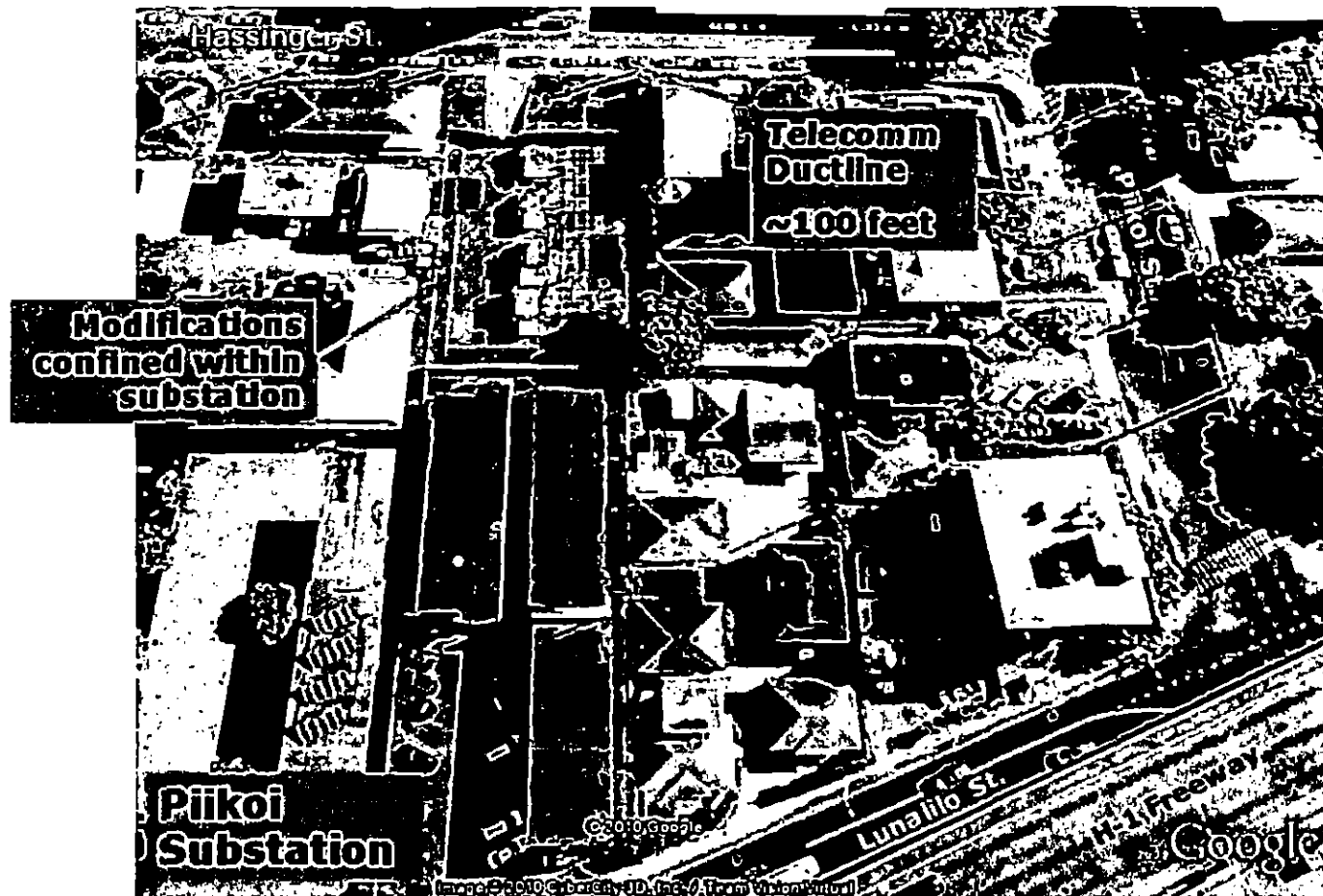
In addition to system disturbances, the Phase 2 Modification will provide the dispatchers a tool for day-to-day system monitoring and maintenance switching. The override capability built into the smart technology will allow the dispatcher to remotely perform maintenance switching. Therefore, personnel will no longer have to be sent into the field to manually perform this type of switching.

For the future, the infrastructure installed in this project lays the foundation for expanding other smart grid initiatives such as monitoring and automating 12kV distribution circuits.



**EAST OAHU TRANSMISSION PROJECT
EOTP PHASE 2 MODIFICATION
WORK LOCATIONS**

EOTP Phase 2 Modification



Conceptual illustration of typical work to be done at each substation. Detailed engineering required to determine exact location of telecomm ductline.